

# W5YI

America's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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## IARU Region III Conference Convenes in Darwin, Australia

"The work of the IARU is vital. Without frequencies the Amateur Service can't exist. ...although the IARU operates on a voluntary basis, it has been effective in ensuring the interests of the Amateur Service are protected, at international conferences where big business seek spectrum. It is only by banding together, forming associations or societies ...that we can collectively work together to retain what frequencies we have and work out policy's to obtain what we would like to have. This puts much more pressure on the IARU as it strives to establish policies and responses to WRC agenda items that may have an impact on the Amateur Service. ...the work of the IARU is very important, and must continue." [Fred Johnson, ZL2AMJ, IARU Region 3 president.]

Formed in Paris seventy-five years ago, the *International Amateur Radio Union* is a global organization made up of national Amateur Radio societies from around the world. The IARU concept was originated by ARRL president, Hiram P. Maxim in 1924.

Although the IARU is officially classified as an "observer" and does not have voting rights at World Radiocommunication Conferences (WRC) and other international meetings, it is regarded as a responsible body which investigates problems and comes up with concerns and solutions. The ARRL provides (or approves) the IARU top leadership in exchange for financing the organization.

The IARU is aligned with and conducts meetings in each of the three ITU regions. Region I includes Europe, Africa, ex-USSR countries, Middle East (excluding Iran) and Mongolia. Region II: North, Central and South America including Hawaii, Johnston and Midway Islands and Region III: the rest of Asia and Oceania (South Pacific.)

WRC's used to be held every 20 years. But with the rapid development of technology and its associated demands on spectrum, WRCs are now

convened every three years. This IARU is now developing a position on future Amateur Radio qualifications which are currently embodied in ITU Article S-25. It is expected that the Amateur Service definition and requirements for entry will be considered at WRC-2003.

The IARU Region One Conference was held last fall in Lillehammer, Norway. In our August 1<sup>st</sup> newsletter we pointed out that (according to the *Radio Society of Great Britain*) the IARU Region One agreement on Amateur Radio qualifications was expanded to include "radio telegraphy."

The original wording was that one of the qualifications should be only "Operating skills." It now appears that the IARU Region One president made the unauthorized change to match the previously IARU published "PDNR." (*Proposed Draft New Recommendations*.)

RSGB president Don Beattie G3OZF, dashed off a letter to other Region One societies protesting the wording change and asked that the Region One Conference and the IARU Administrative Council adhere to the original terminology. The IARU Region One position is that the words "radio-



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telegraphy" was voted on and agreed to by the Conference. The RSGB disagrees and says no ballot was taken at all.

Most radioamateurs, however, believe that radiotelegraphy refers to transmissions sent by Morse code (including the 600-page *Amateur Radio Encyclopedia*, edited by Stan Gibilisco W1GV – a previous Assistant Technical Editor for QST.)

## IARU Region 3 Conference

Hosted by the Wireless Institute of Australia, the eleventh IARU Region 3 Conference gets underway on Monday, August 28<sup>th</sup> at the Carleton Hotel in Darwin (Northern Territory) Australia. It ends on Friday, September 1<sup>st</sup>.

As part of the conference, the Darwin Amateur Radio Club will be operating a special event station from the Carleton Hotel conference venue. The *Australian Communications Authority* (ACA) has granted the special callsign AX8IARU which will be used on many HF and VHF/UHF bands during the 5 days of the conference. A special full color (photographed) QSL card will be available through the VK QSL bureau.

One of the conference Agenda items is "11.2.3 Revision of Article S25, if any, of the Radio Regulations." The Wireless Institute of Australia is already on record as recommending that all Region 3 societies seek an interim top Morse code exam speed of 5 words-per-minute and that a policy of removing all Morse code testing be pursued with national communications regulators prior to the next WRC empowered to discuss the matter.

The following agenda statement was made by the IARU International Secretariat and submitted to the conference. The IARU International Secretariat is the American Radio Relay League. It seeks to explain the IARU position on "radiotelegraphy."

Document No. 00/XI/077

Agenda Item: 11.2.3

### **Status of Revision of Article S25** (International Secretariat)

The International Secretariat is submitting this Information Paper to the Region 3 Conference on the subject of the status of Article S-25 as work in the ITU proceeds toward a revision.

As all Member Societies well know, Article S-25 has been subjected to a careful review and scrutiny over a several-year period by the Future of the Amateur Service Committee (FASC) ably chaired by Michael Owen, VK3KI and with a membership that included Terry Carrell, ZL3QL from Region 3. Various interim reports were issued by FASC and ultimately a strategy was conceived and adopted by the IARU Administrative Council.

In brief, that strategy was based on a belief that the interests of the amateur services would be best served by the creation of an ITU-R Recommendation that would contain the specific technical and operational requirements deemed necessary for an amateur license.

The current draft of this Recommendation is known as M-AOQ (previously styled as M-XXX).

At the Region 1 Conference (Lillehammer, 1999) a paper was adopted, based on an input document from RSGB, which set out an outline of such requirements. Subsequently, the IARU Administrative Council, also meeting in Lillehammer but not as part of the Conference, adopted Resolution 99-1 and an initial draft Recommendation.

At the Conference Preparatory Meeting in November 1999, an opportunity arose to discuss the matter with a respected expert on the workings of Study Group 8. From this discussion it became clear that a "place holder" would need to be submitted at the March 2000 meeting of Working Party 8A so that a Preliminary Draft New Recommendation (PDNR) could be part of the study cycle underway. Therefore, the International Secretariat, with expert advice, drafted input document 8A/146-E, 8 March 2000 that was submitted to WP8A. Document 146 is a 7-page paper that annexes an extract from the CEPT HAREC (TR 61/02) as illustrative of one solution.

After review, WP8A referred the matter to WP8A Correspondence Group 4 (previously known as Group 7) for additional consideration, as reported in ITU document 8A/TEMP/91-E (attached).

This temporary paper will be next considered in October 2000. Prior to that time, IARU will have had the opportunity to offer suggested modifications based on decisions taken by the IARU Administrative Council at its meeting in September, 2000, immediately following your Darwin Conference.

There has been considerable confusion and misunderstanding in some elements of the amateur press because of a lack of experience with both ITU processes and the technical way in which the ITU uses certain words. This has led to claims that the PDNR proposes to maintain the Morse code requirement unchanged, which is not the case.

For example, while a radio amateur might assume that the term "radiotelegraphy" is synonymous with "Morse code," that is not at all correct. Within ITU Regulations, Recommendations and usage radiotelegraphy has a much more general meaning and refers to facsimile, radioteleprinter and some other modes. This is, however, not all the same as stating that there is a requirement to copy Morse by hand and send by ear as is presently stated in Article S-25. It does not imply a required



demonstration of manual Morse code operating ability any more than "radiotelephony," also listed as an operating skill about which a licensee should demonstrate knowledge, implies a required demonstration of voice operating ability.

The PDNR is annexed to this report. *[Printed in our August 1<sup>st</sup> W5YI Report. Page 2, column 2.]*

Please note:

- the outline is consistent with the discussions in Lillehammer
- the outline is only a draft and can be changed by reasoned input
- the words used are in accordance with the definitions of the RR

This last point is important when considering the PDNR in relation to the existing wording of S-25. In the present Article S-25, reference is made to a knowledge of Morse, not to radiotelegraphy. The RR, in Article S1.117, define telegraphy as:

A form of telecommunication in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use.

Thus, it is clear that under the Radio Regulations a knowledge of radiotelegraphy is important for radio amateurs if they are to use a number of modern methods of communication other than voice.

If the Region 3 Conference in Darwin wishes to discuss the draft Recommendation M-AOQ and to offer comment, the Administrative Council would welcome this input on the understanding that it remains the responsibility of the Administrative Council to coordinate a world view on behalf of the IARU.

Don Beattie G3OZF (RSGB president) now says he is going to Darwin, Australia to attend the IARU Region III Conference scheduled for August 28<sup>th</sup>. No doubt he will bring to their attention the fact that he believes the IARU Region One agreement on Amateur Service qualifications was "manipulated" by the IARU.

It is beginning to look like the IARU AC will support "radiotelegraphy" no matter what the troops think or want. The controversy prompted Dutch amateur PE1MHO to make the following observation:

"BLINKERS (n) (BLINDERS in USA): a device worn by horses and IARU officials to limit their peripheral vision so that they won't get distracted by what is going on around them. The difference is that while horses wear them to improve forward vision, IARU officials use them to impair it."

## IARU Administrative Council meeting

The policy and management of the IARU is carried out by the Administrative Council (AC). The Members are the IARU President and Vice-President, Secretary and two members from each of the three Regional Organizations. The next meeting of the IARU Administrative Council will be held in Darwin, Australia, September 3-4, immediately following the IARU Region 3 Conference.

The members of the ACI are IARU Pres. Larry Price, W4RA, Vice Pres. David Wardlaw, VK3ADW, Sec. David Sumner, K1ZZ; regional representatives (Reg. 1) Lou van de Nadort, PA0LOU, Tim Hughes, G3GVV; (Reg. 2) Tom Atkins, VE3CDM, Eduardo Estrada, HC2EE, and (Reg. 3) Fred Johnson, ZL2AMJ; and Sangat Singh, 9M2SS.

It is the IARU AC (Administrative Council) that makes the "final cut" on what they will be supporting to the ITU WRC-2003 in the way of ham radio qualifications.

## INTERNET AND THE AMATEUR RADIO SERVICE

The Wireless Institute of Australia (WIA) is presenting three papers at the IARU Region 3 Conference which explores how the Internet can interact with ham radio.

Some of the major potential uses of the Internet by Amateur Radio include the low cost ability to publicize the existence and scope of the Amateur Service to non-amateurs, the distribution of a wide variety of Amateur Radio databases and information, the real time linking of Amateur and Internet communications and the use of the Internet as a license training tool to gain new recruits.

On the negative side is the fact that the Internet is itself well placed to be a major competitor to ham radio. Amateur Radio needs to be evaluated against the capabilities of the Internet and search for differences on which to focus ...such as communications, experimentation, community service ...and self education and training. "It is the low cost of the Internet and the lack of need for antenna systems or dependence on propagation that makes the Internet more attractive in today's environment," WIA said.

The Internet offers a rich opportunity to provide an interactive Amateur Radio license training course at very little cost to the organization providing the service and no cost to the student. An advantage is that an online training course can reach people in rural or remote areas and provides a vehicle to learn about Amateur Radio for those who don't have time to attend classes. Electronic distribution of a training course allows the information to be distributed quickly where it can then be printed. A free online course is already available in Australia and there has been an enormous response from other countries who also want to develop a similar course. The free course is overseen by a "facilitator" [instructor] who assists several students at a time. Or a student working alone can e-mail back their assignments to the facilitator for review.



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## CUTTING EDGE TECHNOLOGY

### ■ What are the greatest engineering accomplishments of the 20th century?

Professional engineers from all over the country voted on this question and announced the results during National Engineers Week. What would you have listed? Here are their answers: 1. Electrification. 2. Automobiles. 3. Airplanes. 4. Safe, abundant water. 5. Electronics. 6. Radio and TV. 7. Agricultural mechanization. 8. Computers. 9. Telephones. 10. Air conditioning and refrigeration. Imagine, for a moment, what your life would be like if all of these things suddenly disappeared. Engineers made all of these things possible.

■ **Fast, low-voltage DSP chip.** Lucent Technologies offers the world's fastest digital signal processor, the DSP1628. It runs at 100 MHz from a power supply of just one volt.

■ **Interference-free headset uses light instead of electricity.** Micro Optics Technologies' fiber-optic headset turns an electrical signal into a light-modulation signal, allowing a pilot or driver to communicate clearly with no worry about radio-frequency interference.

■ **Smaller heat pipes remove heat from electronics.** With computer circuits getting smaller every day, the heat they generate must be pumped elsewhere. ACK Technology's micro heat pipes can deliver as much as 45 watts of heat away to a safe zone. This creates a temperature difference as much as 10 degrees, and it comes through the use of a liquid inside the tiny pipes. Heat vaporizes the internal liquid, which travels to the cold end of the pipe. The gas condenses back into a liquid, removing heat. Capillary attraction inside the pipe returns the liquid to the hot end. The heat pipes can be flexed and repositioned as necessary.

### ■ Fewer ROM chips getting trashed.

One estimate says as many as one-quarter of all Read-Only Memory (ROM) chips wind up in the trash. These chips contain the actual software that tell a computer what to do. Flash memory allows old programs to be dumped and new ones loaded at any time, negating the need to swap out integrated circuits. This is often necessary because the more complicated the software, the more likely that bug patches and upgrades will be needed in the future. If people don't need to tear the computer

apart to replace chips, it's less likely to be damaged and the programmable memory chips can be used again and again.

### ■ Calculators are being built into handheld electronic test equipment.

Communications gear can be made more useful to technicians by including an on-board algebraic calculator, which performs the standard multiply-divide-add-subtract functions, as well as more complicated actions such as square root. It's relatively easy to build calculator functions into test equipment, since there are usually enough buttons to represent numbers and operations, and software will do the job of crunching numbers. This lets technicians minimize the number of tools they need to carry out in the field while taking readings.

### ■ New communications standard for electronic musical instruments.

What may be a successor to MIDI (Musical Instrument Digital Interface) is a much faster, more powerful communications format called mLAN. mLAN was designed to link together electronic synthesizers and recording equipment through a serial data network link. Even faster than USB rates, the 200-megabits-per-second data rate allows mLAN to exchange up to 50 audio data channels at once. It can also exchange serial data, video information, and more -- simultaneously.

### ■ New Peltier-effect device creates lower temperatures.

Peltier-effect electronic devices become both hot and cold when current runs through them. They're often used to remove heat from a source and deliver it to a target. A new alloy made from a mixture of cesium, bismuth, and tellurium creates a temperature difference as high as 100 degrees. That's almost 50% better than previous formulas. Since heat is the enemy of electronic circuits, such a heat sink could allow laptop computers to run even faster. (Thermoelectric coolers are already used to keep laser diodes cool in telecommunications applications.)

■ **Electrical grid troubles.** With the onslaught of summer creating a crushing demand for electric power, utilities are literally feeling the heat. Chicago's Commonwealth Edison is trying to make up for power outages from last year's heat wave by offering to pay certain business owners for any outages that occur this year. The power industry in California is currently going through deregulation, and the cost of electricity in San Diego is skyrocketing to the point where city officials have practically told their citizens not to pay any-

thing more than last year's rates. Computer companies in Silicon Valley are building their own power plants so they won't be dependent on the grid. Dallas/Fort Worth International Airport is planning to build its own generating station, too.

■ **Welcome to the 21st century: IBM is developing a "Life Sciences" unit.** Spending over \$100 million on the new division over the next three years, IBM says they will create new products to work with the terabytes of information created from the Human Genome Project. Drug companies will use the new technology to test new treatments.

■ **The next generation of military dog tags incorporates digital technology.** Although still worn around the neck, the new dog tags resemble thick luggage tags. They include read/write memory, keeping track of a soldier's medical history and other data. They contain far more information than the old metal tags ever could, and are just as tough. They hold up to heat, cold, radiation, sea water, blowing sand, magnetic fields, corrosion, high voltages and other dog tags. Their data can be read and updated in a flash.

■ **Voice-recognition software gets even smarter.** Large organizations often use voice-recognition technology for handling incoming phone calls, such as airline reservations. The latest versions of this software not only recognize thousands of words in over a dozen languages, but they can also detect when a speaker switches from one language to another.

■ **Electronic components can behave strangely at microwave frequencies.** Even physical lengths -- however tiny -- become important. Will high-speed signals degrade when just traveling through a connector? Connector manufacturers put designers' minds at ease by offering data files that allow their products to be modeled with electronic examination software, such as SPICE. The automated circuit examination then tells designers how a particular connector will affect a prototype circuit's performance -- before it's even built.

■ **Score one for the studios.** Hollywood scored a major victory in August when a judge in New York ruled that a Web site on the Internet could not post software that allows people to break the copy-protection method on Digital Versatile Discs -- DVDs. Disney, Universal, Paramount, 20th-Century Fox, and other



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big-name movie studios sued a Web master from posting a copy-protection-breaking program called DeCSS on his site, [www.2600.com](http://www.2600.com). The studios claimed they would lose millions of dollars from people freely copying their products and illegally selling them. This case tested the Digital Millennium Copyright Act, passed in 1999, for the first time.

■ **On the same topic, JVC has already developed a copy-protection technique for the next generation of home video recorders.** D-VHS, which will be able to record and play back high-definition (HDTV) programs, will still be compatible with the old VHS standard.

■ **How do you feed fiber-optic cable through a long conduit?** One popular method literally blows it through with compressed air. The optical cable's jacket contains thousands of tiny dimples, much like those on a golf ball, to help "grab" the moving air and give it something to pull. This method spreads out the tension along the entire cable, rather than concentrating it in one small section during normal pulling.

■ **Measure temperature with fiber-optic cable.** Luxtron Corporation offers a "fluoroptic thermometer," a PC-based plug-in circuit board that includes a fiber-optic cable with a ceramic sensor on one end. The board sends a brief pulse of light down the cable, causing the sensor to fluoresce, or glow. Heat affects the rate at which the glow will diminish, and the digital signal-processing hardware in the computer calculates from the returned signal what the temperature at the sensor is. One fiber-optic cable does it all, and it's immune to RF interference -- making it ideal for measuring temperatures in strong electromagnetic fields.

■ **Oscilloscopes with touchscreens let you examine waveforms with just your fingertip.** If using a mouse to indicate what you want is difficult or inconvenient, just trace a box around the desired on-screen target with your finger. The 'scope will then zoom in or do whatever else you tell it to do. On-screen menus let you push "buttons" to step through tutorials, triggering options, etc.

■ **Semiconductor manufacturing getting better.** Making even a single transistor in the late 1950's and early 1960's was an iffy process. Sometimes a batch of transistors would have as much as a 90% failure rate. With improved control and lots of experience, semiconductor compa-

nies now produce whole trays full of chips -- each of which contains dozens of millions of transistors -- with failure rates as low as 10% or lower.

■ **Be careful walking across that clean room!** Static electricity, the enemy of electronic circuits, is more likely to be found inside a semiconductor "clean room" than most other places. The humidity must be kept low in there, which means air can't rid itself of static charge as easily. Separating any two surfaces creates static electricity, be it from shoes on the floor to pulling off adhesive tape. That's why most clean rooms contain air ionizers -- devices which remove the electrically charged atoms from the air. But no device is perfect.

■ **How contaminated is a printed-circuit board?** Engineers can quickly find unwanted chemicals at low levels by making an "ionograph," a snapshot of sorts that displays rough amounts of ionic contaminants on a PC board. Boards must be thoroughly cleaned and inspected before they're stuffed with parts and soldered, or unwanted problems may develop with the circuitry and could be very difficult to cure.

## GADGETS OF THE FUTURE

■ **Smoke detector automatically adjusts itself.** Most smoke alarms are as dumb as a box of rocks; they can't tell the difference between built-up dust, smoke from a cigarette, or a raging sea of flame. But a new type of smoke detector, called Acclimate, automatically adjusts its sensitivity level continuously. Built by System Sensor, Acclimate's on-board microprocessor and software are designed to reduce false alarms. A combination of thermal and optical sensors can detect smoldering fires or flames. Cigarette smoke signatures are "nulled out," as are buildups of dust -- another source of false alarms. When these sources are removed, Acclimate becomes more sensitive again.

■ **Conference rooms still use audio/video equipment, though projectors are becoming well hidden.** The Pop 'N Plug interconnect box is a port that literally pops up from the boardroom table, allowing the connection of audio and video cables to laptop computers or video players. When not in use, Pop 'N Plug lowers flush into the table.

■ **The Revelation LCD video projector is hidden when not in use, too, but inside the ceiling.** When activated, only a mirror is lowered to a 45-degree angle and the projector remains out of view. The image reflects off the mirror and onto the wall or projection screen. Turn it off, and the mirror closes up against the ceiling again. You don't hear any fan noise and there's no equipment clutter in the room.

■ **Kitchen appliances that "talk" to one another.** Sunbeam's Home Linking Technology (HLT) lets coffee makers, microwave ovens, and other electrical devices in the kitchen communicate over the house's electrical wiring. Other manufacturers are building Internet-connected refrigerators, which alert the service center when it's time for preventive maintenance (and even recommending a list of parts to bring, so one trip will do the job). Bar-code readers from a handheld scanner kept in the fridge door tell the oven what food will be cooked, and which temperature to set itself for. Appliances can never become obsolete because new features will be added from a simple software upgrade, downloading all by themselves from their Internet connections. Did you leave the refrigerator door open this morning? Expect an e-mail from the appliance itself, telling you about it.

■ **Smart vacuum cleaner.** Hoover now offers an upright vacuum that lets you know if you've already cleaned a particular section of the rug. The "Embedded Dirt-FINDER" technology shines a red or a green light, depending on the cleanliness of the carpeting. A yellow light lets you know when it's time to empty the bag.

■ **General Motors says that it will include Sony's Memory Stick technology in future automobiles.** A Memory Stick is a digital memory storage device, about the size of a pack of gum, currently holding about 64 megabytes of data. It can hold digitally recorded songs or anything else that can be recorded. Sony already offers a Walkman-like Memory Stick audio player.

■ **Quicker than a wink. A new type of electronic "eyelid" has been developed by the University of Florida.** It can change the transparency of a camera lens from clear to completely opaque in an instant. It does this with an array of tiny (less than one millimeter across) curled flaps, which can be controlled individually or in groups. Each flap consists of two different metals bonded together, just like



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the temperature-sensitive spring inside a thermostat. When excited by a voltage, the flap lays flat and blocks light. When relaxed, the flap springs back open on its own and allows light to pass. A beam of light can be "chopped" as fast as 10,000 Hz. This can modulate a light beam -- converting it into an information-carrying medium. Sunglasses can be controlled by computer, and special effects in video cameras can be created. Sensitive cameras can be protected from blinding bright light in this manner.

■ **Working with PVC pipe?** You can now bend it into any shape you like with the Hotbend 98 heat gun. It's perfect for electricians who need to wire a power line inside PVC pipe, without the time-consuming task of cutting, joining and gluing a variety of fixtures.

## EMERGING COMMUNICATIONS

■ **Ever wonder how AM radio announcers can play so many audio clips and sound effects on cue?** Gone are the days of troublesome tape cartridges. Today, all sounds are stored on a self-contained, hard-drive-based audio recorder. The on-screen menu displays which buttons will play which sound. One system, called Instant Replay, can hold as much as 24 hours of digital sound.

■ **Less than a decade ago, satellite phone systems seemed the technology of the future.** Now they are headed to the scrap heap due to few subscribers and high air time and equipment costs. Motorola's LEO Iridium Project got an extension to stay aloft. But if the bankrupt communications system doesn't find a buyer shortly, ground controllers may no longer be able to send commands to, or receive data from, the dozens of expensive low-earth orbiting satellites.

■ **Why do you see fewer TV antennas these days?** Over two-thirds of American homes don't get their TV reception over the air anymore; they rely on cable or Direct-Broadcast-Satellite to deliver their programs.

■ **The down side of airplane phones.** You've seen them mounted in the back of the headrest of the seat in front of you in commercial jets. You just swipe a credit card and dial the number. But are they really worth the extra cost? Most air travelers don't spend huge amounts of time in the air; most of their journey is spent on

the road or in the terminal, waiting. Ordinary cellular telephone rates are cheaper on the ground. (Although you don't have to keep your eyes on the road inside an airplane.)

■ **Your GPS receiver is now 10 times more accurate.** On May 1, 2000, controllers of the GPS network deactivated a built-in feature that kept most receivers' accuracy to only within 100 meters. With the Selective Availability (SA) feature turned off, almost anyone using the Global Positioning System will now find locations given to within 10 meters. The government wanted to do this anyway, but had originally planned to do it in 2006. Why now? One reason -- the upcoming regulation demanding that cellular telephone systems be able to pinpoint a caller's location during a 911 emergency call. (How often can you say that your radio became ten times more valuable, with the push of a button, for free!?)

## COMPUTER INFO

■ **Screen savers are not really necessary.** Not only do they often cause computers to crash, but they also waste electricity. Many of the newest video monitors are designed to electrically turn themselves off if told to by the computer, which does so if it doesn't detect any keyboard or mouse activity after a predetermined time. But this "shut-down" feature can also be deactivated by the user, and often is. You can save a bit on your electric bill by taking advantage of the energy-compliant "screen saver."

■ **The next generation of home video games is rushing towards us.** Sony's PlayStation2, already on sale in Japan, will be released in America in October. Carrying a \$300 price tag, the PSX2 will not only play games, it will also play movies on DVD discs and music from conventional audio compact discs. It also contains a high-speed modem. Sony is already marketing the graphics processor chip inside to other companies, in hopes of expanding into other video fields. DSL and cable modems, as well as hard drives, can be connected to the PSX2.

■ **Microsoft wants to get in on the action, too.** Their Xbox system is still being built. It will run games from a 600-MHz Pentium III processor, 64 MB of RAM, a DVD drive, and an Ethernet port. The PlayStation2 doesn't have a

hard drive built in, but the Xbox will. This system isn't expected to be released until late 2001.

■ **Nintendo's Dolphin system, expected early next year, will have a DVD drive.** But whether it will also play DVD movies is unknown as yet. Dolphin can connect with the next generation of Nintendo's Game Boy system.

■ **Computer game designers now worry more about how their video game characters will be interpreted by players,** than how the gameplay behaves. The graphics hardware does a very convincing job in drawing believable characters with smooth action. Now, though, designers worry about how players will react to what are supposed to be "heroes" and "villains." Does the hero look like a hero? How is he presented? Does the villain look like he's really evil? How do the characters move? How are they posed? Psychologists say that people subconsciously make decisions about other people based on generic appearances. Game designers are adjusting their software (and therefore their sales, hopefully) accordingly.

■ **The newest, largest hard drives use glass platters.** IBM's 75-gigabyte hard drives contain spinning platters made of glass because they're smoother and stiffer than the traditional aluminum platters. The read/write heads therefore work with more stability, packing more data into a smaller space.

■ **"But that IS the computer!"** It may seem as though half the computer is missing, but it may just be the next generation of desktop computers. Cybernet Manufacturing's ELITE-1 is a complete personal computer, totally packaged inside a keyboard. The zero-footprint PC contains an Intel Celeron 400-MHz microprocessor, 32 MB of RAM, a 4.3-GB hard drive, various I/O ports, a floppy drive and a monitor connection. No monitor is included, but the ELITE-1 will work with any SVGA display. Nokia, the cellular telephone company, expects more than one billion people to have mobile phones by 2002. They also expect that more Internet connections will take place over wireless products than desktop computers by 2003.

■ **Click a color video camera onto your laptop computer.** A tiny video camera by Panasonic is designed to clip onto the display of a notebook computer, allowing travelers to send video images



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through e-mail and participate in live videoconferencing.

■ **"If it ain't broke..."** Computer hardware experts say that at least one-tenth of all Windows applications programs that were written before the general release of Windows 2000 Professional will need to be "patched" -- that is, rewritten or upgraded to perform properly.

■ **The next software-protection scheme.** Hardware dongles have long been an efficient, relatively inexpensive method of keeping computer users from pirating expensive software. A dongle is a small device that plugs into a computer's parallel port. The software queries the device. If the response isn't correct, the software won't run. Therefore, the program won't run without the dongle. But the newest computers are switching from the standard parallel port to the new Universal Serial Bus -- USB. Word has it that engineers are working on a new type of dongle to fit USB ports for future software protection.

■ **Edit out the music mistakes.** Computerized audio filters can be programmed to search through an entire song or music track, looking for one particular sound or note to excise. The characteristic sound of guitar strings squeaking as the player slides his fingers up and down the neck can be virtually eliminated by recording the song into a computer, editing the track to that particular sound, then command the software to search and remove all sounds resembling it. It's fast, simple, and it avoids the cost and time of going back and re-recording the song.

■ **Personal computers becoming a victim of their own success?** We may not see as many PCs in our homes as we do now, primarily because their technology is being incorporated into so many other devices: TV sets, telephones (base and cellular), even kitchen appliances. You will be able to connect to the Internet from virtually any home or car, thus reducing (but not eliminating) the need for desktop PCs.

■ **Still keeping old software? Can't bear to part with your DOS-based versions of WordStar, and all the documents you typed with it?** You're not alone. Though almost no one uses programs released for the first PC anymore, it isn't easy to part with them if they're in storage. The problem today, however, is reading them. Each upgrade of a particular program often fails to keep up its leg-

acy stature -- that is, Version 3 may not be able to read an old Version 1 document. If the original program is no longer supported (the publisher may have gone out of business, for example), it may not be possible to import that document into a more modern program. But fear not: Internet companies are popping up for the express purpose of translating those old files into more modern formats. You can either send them your old diskettes (which probably don't fit in your computer today, anyway) or transmit them through e-mail.

■ **Does the USB make RS-232 devices obsolete?** Not really. The Universal Serial Bus (USB) comes on practically all new computer equipment. It's designed to be a high-speed serial data link to connect all forms of peripherals. It's not compatible with the older RS-232 standard, which has been around for decades. But you can now purchase a palm-sized module that plugs into a USB port, so you can connect an RS-232 device. Buying such modules is often far cheaper than upgrading lab instruments, printers, and other older, reliable devices.

## INTERNET NEWS

■ **One problem with posting photographs and images on a Web site is, anyone can copy them.** A couple of clicks of the mouse button is all it takes. But at least one software company, cSafe Ltd., offers a program to combat this. Their Picsafe software disables the "copy" and "paste" features inherent in Windows, so Web designers won't have to worry about copyrighted pictures being reproduced without permission.

■ **Motorola Telematics Group has a new voice-actuated in-dash car radio called "iRadio"** which promises to bring the Web to your automobile. After indicating preferences on a Web site from home, drivers using iRadio will be able to speak a single word and get instant results in the car. Motorola's iRadio interface enables drivers to capture music on demand; listen to real time traffic reports; download audio books; access voicemail; receive the latest news and weather reports; get updated stock portfolio information and access email. Other Gee-whiz features are destination selection, route calculation and navigation guidance. Engine problems? With on-board diagnostics capability your car can be diagnosed 'on the fly' and directed to a repair facility

should repair be necessary. iRadio can also call for roadside assistance and emergency services.. These mobile multimedia features are delivered wirelessly via Web access, satellite, digital cellular, and FM side-band technologies. Motorola has formed alliances with carmakers, IBM, technology start-ups and others to speed the product to market. Government and safety organizations, while enthusiastic about the potential of new gadgets like mapping and locator systems in cars, are more wary of the fun stuff after realizing the distractions caused by hand-held cell phones. Motorola says the use of voice commands rather than hand-pressed buttons should enhance safety.

■ **Napster has been banned by several colleges and universities.** The music-exchange Web site hasn't caused so much bother to school administrators because of possible copyright violations, as much as the heavy Internet traffic it creates. So many students have accessed Napster at the same time through the same college networks that they clogged up the systems. The legal crackdown on Napster has energized the pirate community and more file-sharing programs with names like Gnutella, iMesh, and Scour are becoming available.

■ **Get ready for more Internet suffixes.** The standard .com, .net, .org, .gov, .mil and .edu suffixes have appeared on the overwhelming majority of Web site addresses for years. By the end of this year, we'll likely finally see extra suffixes such as .shop, .travel and .tel. To avoid a mad rush of get-rich-quick artists who'll attempt to buy up and claim big-name domain names with the new suffixes, Internet registration groups will allow only those users with legal copyright claims to register them.

■ **The digital majority is shifting.** Currently, most Internet users are Americans. But it's estimated that within three years, the majority of Web surfers will be outside the United States. One of the biggest chunks of these global users will be Asia; at least one quarter of the world's Internet traffic will come from there.

■ **Wal-mart plans to open up 6,700 new food centers across the U.S. this year making it the largest grocer in the nation.** But their "Always low prices!" may not be the lowest. By using the Internet, UPS and FedEx and other independent delivery systems, food producers are looking to bypass Wal-mart and deal direct with the consumer.



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Distributors make the lion's share of the profits from providing food. Look for this to change as farmers and wholesalers master the techniques of e-commerce.

## WASHINGTON WHISPERS

■ **Hidden DF antennas.** Police and federal law-enforcement officials have a novel way of disguising certain radio-carrying surveillance vans. The antennas are hidden inside, and disguised as, long PVC pipes strapped onto the roof. The vans look more like they belong to a plumber or a building contractor.

■ **911 calls stored on discs.** Emergency phone calls are often now being archived on magneto-optical discs and DVD discs. The advantages over tape are many. Database searches are much faster, and data fields can be accessed according to time of emergency call, the date, which radio channel was used, Caller ID and more. Discs stand up to time better than digital audio tapes.

■ **"I'm gonna make you a star."** The Air Force Research Lab and a team of astronomers are teaming up to build a laser designed to temporarily create a stellar image in the earth's mesosphere. Fired from the ground, the laser will strike a special layer of sodium atoms, which will then glow like a star, 60 miles up. The operation is part of an experiment to fine-tune telescope optics as they pick up light shining through the earth's atmosphere. Like adjusting an oscillator for drift, the stellar reference will make ground-based telescopes even more capable of tracking orbiting objects as small as a basketball, as high up as a thousand miles

■ **More magic from NIST.** The *National Institute of Standards and Technology* has created a radio antenna that incorporates a fiber-optic cable inside it. A built-in RF device converts the electrical signal into an optical one, at the antenna itself. This allows delivery of data through a "light pipe," thus cutting down on RFI.

■ **NASA watches wildfires with satellite.** Forest fires in the Pacific northwest region of the U.S. are being tracked by a NASA satellite called Earth Probe. It continuously examines the smoke from the dozens of fires and transmits that information to the ground. The Environmental Protection Agency (EPA) uses that data to track and predict smoke pollution, and also to tell firefighters precisely where all

the fires are. Earth Probe's special ultraviolet light sensors detect the smoke signatures.

■ **Federal court says "No!" to wiretapping and e-mail monitoring of private citizens.** The U.S. Court of Appeals has restricted the FBI's ability to track the whereabouts of cell phone users - a capability which was approved by the FCC just last year. The court told the FCC that it was wrong to go along with the FBI's demands at the cost of privacy. The Justice Dept. had asked for authority to track the location of suspected criminals via their cellular phones. Privacy groups and the telecommunications industry took the government to court, arguing that the proposed surveillance capability - along with others the DOJ had requested to keep up with increasingly sophisticated criminals in the digital age - went beyond current law and carried the potential for abuse against law-abiding citizens. The court ruling also defined the terms that law enforcement must satisfy before monitoring new modes of communications. At risk is the FBI's new controversial "Carnivore" surveillance system which dips into the Internet to scan and capture e-mail messages to or from someone under investigation.

## AMATEUR RADIO

■ **The 19th Annual ARRL and TAPR Digital Communications Conference will be September 22-24 in Orlando, Florida** -- just minutes from the Orlando International Airport and not far from area attractions and vacation spots such as Disney World, Universal Studios, and Sea World. The Digital Communications Conference is an international forum for radio-amateurs in digital communications, networking, and related technologies to meet, publish their work, and present new ideas and techniques for discussion. < <http://www.tapr.org/dcc> >

■ **The Quarter Century Wireless Association (QCWA) recently held elections for Officers and Directors for the Fall 2000 - 2002 period.** K0BC, Gary Harrison has been elected President and VE3CT, Croft Taylor, elected Vice President. QCWA is a US headquartered Amateur Radio Organization with about 10,000 members world wide. It is well known for its Scholarship program for university undergraduates, and for participating in Community Service Activities

through its 150 Chapters in North America and Europe. This year's QCWA Convention will be held in Toronto on October 13 - 15 at the Delta Toronto Airport Hotel. Convention Application Forms are available on the QCWA Web Site located at: < <http://www.qcwa.org> >.

■ **The National Museum of Broadcasting (Pittsburgh, PA) wants to "Save the Garage!" where radio broadcasting was born.** In 1919-20, radio amateur Frank Conrad 8XK founded the broadcasting industry in a small red-brick garage behind his home on the borderline of Pittsburgh and Wilkinsburg, PA.

He began twice-weekly broadcasts in late 1919, testing his equipment with various sounds and phonograph records. Westinghouse, his employer, quickly grasped the commercial applications of the medium and created KDKA radio in 1920, erecting transmitters on its own property with Conrad as the lead engineer. Conrad's garage was the backup station for the first KDKA broadcast: transmission of the presidential election results on Nov. 2, 1920.

A group of historians are trying to raise \$50,000 to purchase, dismantle and remove the garage to another site.

■ **The International Space Station is the largest and most complex international scientific project in history.** Led by the United States, the International Space Station draws upon the scientific and technological resources of 16 nations: Canada, Japan, Russia, 11 nations of the European Space Agency and Brazil.

More than four times as large as the Russian Mir space station, the completed International Space Station will have a mass of more than 500 tons. It will measure 356 feet across and 290 feet long, with almost an acre of solar panels to provide electrical power to six state-of-the-art laboratories.

Russia has already provided two modules; an early living quarters called the Zvezda Service Module with its own life support and habitation systems and the Zarya Power Module - a platform of solar arrays that can supply about 20 kilowatts of electrical power.

International Space Station flight controllers in the United States and Russia are continuing preparations for the next station visitors, the crew of Shuttle mission STS-106, planned to open up the newly attached Zvezda living quarters module for the first time. STS-106 and its seven-member crew will launch to the Inter-



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national Space Station from the Kennedy Space Center, Florida aboard Atlantis on September 8th.

While at the station, Atlantis' five astronauts and two cosmonauts will deliver supplies, unload the Progress supply vehicle, outfit the Zvezda Service Module and perform a space walk in preparation for the arrival of the Expedition 1 crew in early November.

The International Space Station continues to rapidly expand, now measuring 143 feet in length and weighing 67 tons. The ISS can be viewed from the ground under proper lighting conditions. To see when the ISS is visible, check the human space flight website at: <<http://space-flight.nasa.gov/realdata/sightings/>>.

After STS-106, the next shuttle mission to visit the space station in the assembly sequence will be STS-92, which will deliver more components and equipment. STS-92 is scheduled to liftoff October 5.

This sets the stage for the arrival of the station's first permanent crew. The three-member crew is scheduled to launch October 30 on Flight 2R and arrive at the station two days later. The launch vehicle will be a Russian Soyuz rocket.

The first ISS (all ham) crew consists of Commander Bill Shepherd KD5GSL, Flight Engineer Sergei Krikalev, U5MIR and recently, Amateur Radio licensed Soyuz Commander Yuri Gaidzenko (call sign not yet available.)

The crew has already received some initial training on the use of the US-provided Amateur Radio gear to be installed as part of the *Amateur Radio on the International Space Station*, or ARISS, effort. The session was conducted at Russia's Gagarin Cosmonauts Training Centre.

On the negative side, the U.S. General Accounting Office (GAO) has issued a distressing report stating the two Russian built modules - the Zvezda Service Module and the Zarya Control Module - fall short on meeting some important safety requirements.

Significant areas of noncompliance on one or both of the modules include (1) inadequate shielding from orbital debris, (2) an inability to operate after losing cabin pressure, (3) a lack of verification for the design and service life of windows, and (4) excessive noise levels. NASA officials said that shortfalls in Russian funding, designs based on existing Russian hardware, and technical disagreements with Russian engineers are the main reasons the modules do not comply with all safety re-

quirements. NASA waived safety requirement compliance after determining that the risks were acceptable.

## ■ Ex-California Ham indicted and arrested for unlicensed operation.

Last May, the Grand Jury for the United States District Court for the Central District of California indicted former amateur Richard A. Burton ex-WB6JAC. He is charged with 6 felony counts of operating unlicensed on Southern California repeaters. Burton was arrested and taken into custody August 5<sup>th</sup>. Bail was set at \$20,000. He also has received two earlier prison sentences for unlicensed operation. Trial is scheduled for October 3<sup>rd</sup>.

■ **In other enforcement actions:** The FCC says it has information that **Joseph A. Keller W8WW** of Lake Worth, Florida has "...been interfering with communications on 28.425 MHz by deliberately transmitting unreasonably close to that frequency while other licensees or groups were using that frequency." He was reminded that Amateur frequencies are shared and that such radio practices are contrary to the rules and degrade the service for legitimate users. Keller was asked to respond to the allegations within 20 days.

■ **Reyes Lugo, NP3N** (Chicago, Illinois) has had his Extra Class license canceled by the FCC effective August 15<sup>th</sup>. He had been ordered to retake the Extra Class license examination, but passed only the 5 wpm Morse code element.

■ **Tom E. Lee, AC5RU** (Jerusalem, AR) had previously been notified by the FCC that his 146.625 MHz repeater was interfering with a coordinated repeater (KD5CYA) operating on the same frequency. As per Sec. §97.205, when there is interference between a coordinated and an uncoordinated repeater "the licensee of the uncoordinated repeater has primary responsibility to resolve the interference." The coordinator pointed out that Lee had moved his repeater numerous times, thus losing the coordination and another repeater was coordinated on the frequency. Since Lee was unable to demonstrate coordination, he is responsible for preventing interference to the KD5CYA repeater system.

■ **Jan S. Lepitak KM4KC** (Spring Hill, FL) has been ordered by the FCC to retake all written license examinations leading up to and including the Advanced Class (old Elements 2, 3A, 3B, and 4A) and the Morse code exam at 5 words-per-

minute. The exam must be completed by October 20.

In an August 8<sup>th</sup> letter, the FCC has notified **Woody B. Bradley NC4OK** (Elm City, NC) and **Ronald A. Neal KE4KFZ** (Clayton, NC) that they no longer need to retest for the General Class as previously ordered on July 11<sup>th</sup>.

■ **Julian Sanchez Colon KP4RA** (Guayama, Puerto Rico) has had his Extra Class license renewal set aside. The FCC is looking into allegations of irregularities at an Amateur examination at which he was team leader. The examination session took place on March 18, 2000 in Salinas, PR. It appears that all of the Morse code exam transcription (answer sheets) were in the same handwriting and one of the examinees said she had not been administered any license exams on that date. The test results were never processed for licenses.

■ **Ronald G. Derderian KB6VTN** (Beverly Hills, CA) has been cited by the FCC for allegedly operating as net control of a "Beverly Hills Police Department Disaster Communications System." Derderian supposedly ordered the frequency of "N6CBW" "restricted." The Commission pointed out that "Amateur frequencies are not authorized for police use, nor do you have authority to restrict any Amateur frequency for specific use." He was asked to respond within 30 days to the FCC "stating the circumstances of this Amateur radio operation and the authority under which you were acting."

■ **Robert W. West, WA6MFJ** (North Hollywood, CA) has been sent a follow up letter by the FCC concerning a 7.256 MHz beacon signal he supposedly transmitted to deliberately interfere with ongoing communications. West responded to the FCC by telephone and letter stating that he had identified his station as a beacon station and had read poetry over the air. The FCC said beacon stations are not allowed on the 40-meter band and "To identify as a beacon station, even verbally as a self-assigned indicator, is deceptive and not acceptable under the rules." West was asked to consider "whether to read poetry over the air [is] in the best interest of Amateur radio." The FCC added "...the Commission is not concerned with personal conflicts among operators unless they are carried out on Amateur frequencies. Where they are carried out on Amateur frequencies, the service is degraded for legitimate operators, and such use will not be tolerated."



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## AMATEUR RADIO IN CHINA AND HONG KONG

*Excerpts from papers to be presented at IARU RIII Conference*

China is a developing country and has a goal of becoming one of the world's advanced countries by the middle of the 21st century. To achieve this, China will develop the country mainly based on Science and Education. Amateur radio is included in the national policy of developing science and technology. Since the living standard of Chinese people is not high, it is difficult to purchase a transceiver. Chinese amateurs generally develop their own equipment or modify second-hand used equipment.

Amateur radio was resumed in China in 1982. There are now almost 200 club stations and over 10,000 CRSA members. And more than 2,000 HF individual stations and over 2,000 local UHF/VHF stations have been licensed. In each city of China, there are places for "off-class activities" for youngsters. They are usually called Youngsters' Palace, Home of Youngsters, or the Hall of Science and Technology. Most of the 200 club stations are located there ...each with normally 10-20 youngsters attending activities. Some schools and universities are also purchasing amateur radio equipment for them.

Amateur Radio direction finding is popular in China. ARDF competitions are held each year in the larger regions of China and there are some 300-500 competitors at each event. CRSA holds an annual national ADRF championship with over 1000 participants. Although computers and the Internet are widely used, Amateur Radio has not reached its potential in China.

The Hong Kong Amateur Radio Transmitting Society (HARTS) reports that they have 237 current members. There are 294 unrestricted and 1633 restricted licenses. The number of radio amateurs in Hong Kong continues to grow, due to the introduction amateur exams in Chinese. Previously exams were in English only.

One of the most challenging aspects in Hong Kong is finding somewhere and getting permission to mount a decent antenna, or more often, permission to mount any antenna at all. Half of Hong Kong's population lives in apartments built by the housing department who do not allow antennas, and many private landlords have a similar policy. Hams lucky enough to be able to have access to roof space, often pay several times more for rent of that space every year, than the cost of their radio equipment.

The illegal use of the amateur bands is a serious problem in Hong Kong. Despite rather strong telecommunications legislation, some of the bands, 2m in particular, are essentially no longer "Amateur" as a result of a lack of effective enforcement action. Illegal 10-meter FM users can be heard across the entire band ...mostly Mandarin speaking taxi drivers and fisherman from the South China Sea. Also heard are fisherman on 12 m, 17 m, 20 m and 30 m. Most of the illegal operations are fishing boats chatting with family on shore, while they are out to sea.

## FCC SAYS "NO!" TO LONG DISTANCE CB

On August 21<sup>st</sup>, the Commission released an Order denying Alan Dixon's Nov. 3rd petition seeking to amend the Part 95 rules to permit Citizens Band stations to communicate more than 250 kilometers (155.3 miles) away, and with stations in foreign countries. The current rules prohibit long distance CB communications.

Dixon argued that CB operators should not be prevented from contacting distant CB stations in order to participate in personal convenience, navigation, travelers assistance, and emergency and disaster communications. In addition, Dixon said that the propagation characteristics of CB frequencies are well understood to be "capricious and unpredictable," and that a user should not need a technical understanding of radio wave propagation, or be limited to an arbitrary geographic radius. He believes that allowing long distance CB communications will not alter the primary use of the CB Radio as a short-range service. The American Radio Relay League disagreed.

The ARRL opposed the Petition on the grounds that this proposal seeks to redefine the purpose of the CB Radio Service by allowing long-distance CB communications, which would undermine the core distinction between the CB Radio Service and the Amateur Radio Service. The NAB said the distance restriction is needed to protect consumers from illegal CB radio transmissions that interfere with radio, television, telephone, and other forms of electronic communication.

CB Radio Service operators generally support the proposed rule amendment saying that the present rule is unenforceable, and that communications in excess of 250 km are inadvertent and beyond the operator's control due to the eleven-year sun spot cycle or other natural phenomena. Some believe that unintentional long range communications can be avoided only by relocating the entire CB Radio Service to different spectrum.

The FCC believes that the requested revisions to the rules are inconsistent with the purpose of the CB Radio Service and "...would fundamentally change the nature of the service, in fact, it would be transformed from a short-distance voice communications service, where long-distance communications inadvertently can occur, to an examination-free amateur radio-type service. ...someone wishing to engage in amateur service type communications should seek an amateur radio license and use bands that are expressly allocated for these types of communication.," FCC ruled.

The Commission said that amending the rules to permit long-distance and international communications would undermine the purpose of the CB Radio Service rules, and compromise one of the core distinctions between the CB and the Amateur Radio Service. Therefore, the FCC concluded that Dixon's petition for rule making does not warrant further consideration at this time.